

DOCUMENT RESUME

ED 106 328

TM 004 443

AUTHOR Downey, Ronald G.
TITLE Associative Evaluations: Nominations vs. Ratings.
Technical Paper No. 253.
INSTITUTION Army Research Inst. for the Behavioral and Social
Sciences, Arlington, Va.
REPORT NO TP-253
PUB DATE Sep 74
NOTE 23p.

EDRS PRICE MF-\$0.76 HC-\$1.58 PLUS POSTAGE
DESCRIPTORS Achievement Rating; *Evaluation; *Evaluation Methods;
Leadership; *Military Personnel; Military Training;
*Peer Groups; Performance; *Personnel Evaluation;
Reliability
IDENTIFIERS *Army

ABSTRACT
Two general methods of associate (peer) evaluations--the rating procedure and the nomination procedure--are most often used. While both techniques produce similar results, the variation in procedure used to obtain the data has limited most direct comparisons. Because of this, the differences between the several methods of making the evaluations have not been adequately explored. In this study, three methods of associate (peer) evaluation--one rating procedure and two nomination procedures--were compared in terms of reliability, interrelationships of techniques, relationships with other leadership measures, and relationships with concurrent performance measures. All three evaluations yielded levels of reliability adequate for use in short-range individual selections; all three methods measured the same individual attributes. The nomination method was suggested as the clear choice for operational use because of the additional benefits of minimal rater resistance, ease of scoring, and simple administration. (Author)

ED106328

Technical Paper 253

AD 785 550

ASSOCIATE EVALUATIONS:
NOMINATIONS VS. RATINGS

Ronald G. Downey

LEADERSHIP PERFORMANCE TECHNICAL AREA

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION
THIS DOCUMENT HAS BEEN REPRO-
DUCED EXACTLY AS RECEIVED FROM
THE PERSON OR ORGANIZATION ORIGIN-
ATING IT. POINTS OF VIEW OR OPINIONS
STATED DO NOT NECESSARILY REPRE-
SENT OFFICIAL NATIONAL INSTITUTE OF
EDUCATION POSITION OR POLICY

TM 004 443



U. S. Army

Research Institute for the Behavioral and Social Sciences

September 1974

Approved for public release; distribution unlimited.

U. S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES

**A Field Operating Agency under the Jurisdiction of the
Deputy Chief of Staff for Personnel**

J. E. UHLANER
Technical Director

R. A. ROOTH
COL, GS
Commander

NOTICES

DISTRIBUTION. Primary distribution of this report has been made by ARI. Please address correspondence concerning distribution of reports to: U.S. Army Research Institute for the Behavioral and Social Sciences, ATTN: PERI-P, 1300 Wilson Boulevard, Arlington, Virginia 22209.

FINAL DISPOSITION. When this report is no longer needed, Department of the Army organizations will destroy it in accordance with procedures given in AR 340-16. Navy and Air Force elements will destroy it in accordance with applicable directions. Department of Defense contractors will destroy the report according to the requirements in Section 14 of the Industrial Security Manual for Safeguarding Classified Information. All others will return the report to the originating office.

NOTE. The findings in this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Unclassified

~~SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)~~

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

20. interrelationships of techniques, relationships with other leadership measures, and relationships with concurrent performance measures. All three evaluations yielded levels of reliability adequate for use in short-range individual selection; all three methods measured the same individual attributes. The nomination method was suggested as the clear choice for operational use because of the additional benefits of minimal rater resistance, ease of scoring, and simple administration.

ASSOCIATE EVALUATIONS: NOMINATIONS VS. RATINGS

Ronald G. Downey

Francis F. Medland, Work Unit Leader

LEADERSHIP PERFORMANCE TECHNICAL AREA

William H. Helme, Chief

Submitted By:

E. Ralph Dusek, Director

INDIVIDUAL TRAINING AND

PERFORMANCE RESEARCH LABORATORY

Approved By:

J. E. Uhlauer

TECHNICAL DIRECTOR

U. S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES

Office, Chief of Research and Development

Department of the Army

1300 Wilson Boulevard, Arlington, Virginia 22209

September 1974

Army Project Number
2Q16310A755

Officer Indices b-11

ARI Research Reports and Technical Papers are intended for sponsors of R&D tasks and other research and military agencies. Any findings ready for implementation at the time of publication are presented in the latter part of the Brief. Upon completion of a major phase of the task, formal recommendations for official action normally are conveyed to appropriate military agencies by briefing or Disposition Form.

FOREWORD

The Leadership Performance Technical Area has among its objectives the identification of personal characteristics of performance and their potential for use in the Officer Career Management System and the points of application of these measures in improving current procedures used for military school selection, promotion, or nomination, and duty assignment. As one aspect of the evaluation of these personal characteristics, research is now underway for the experimental introduction of peer ratings in Officer Basic Courses and is projected for Officer Advanced Courses. Peer (or associate) evaluations have in the past been found to be valid predictors of future performance (potential) in a number of military situations but must be investigated in the new setting in which they are now being applied.

The entire task is responsive to special requirements of the Deputy Chief of Staff for Personnel and the Military Personnel Center, as well as to the objectives of RDTE Project 2Q16310A755, Manpower System Development.

The present publication examines the effects of evaluation procedures on psychometric properties, reliability, and concurrent validity of associate evaluations.



J. E. UHLANER
Technical Director

ASSOCIATE EVALUATIONS: NOMINATIONS VS. RATINGS

BRIEF

REQUIREMENT:

To determine if a nomination procedure of associate evaluations can be substituted for a rating procedure.

PROCEDURE:

Data were collected on 125 Army officers attending Branch Basic School. Three different scoring procedures were used, representing a rating procedure and two nomination procedures. Estimations of reliabilities were compared across procedures, and correlations (indices of relationships) were compared with a degree-of-acquaintance score, a Leadership Battery, and school grades.

FINDINGS:

The reliabilities of all procedures were very similar, with some indications that the use of too many individuals in a nominations technique might lower reliability. With the exception of the acquaintanceship scores, there were no differences between techniques in the correlation with other scores. The nomination technique with fewer individuals nominated had a significantly lower relationship with acquaintanceship. A nomination procedure is found most readily usable.

UTILIZATION OF FINDINGS:

The present analysis is the first step in the experimental introduction of associate ratings into Army Schools. The use of a nomination technique saves rater time and effort, is administratively simple and increases acceptance of associate evaluations. Future research will focus upon the issues of reliability across schools, acceptability, feasibility, and validity of associate evaluations.

ASSOCIATE EVALUATIONS: NOMINATIONS VS. RATINGS

CONTENTS

	Page
THE PROBLEM	1
OBJECTIVES	2
METHOD	2
Sample Population	2
Variables	2
Analysis	3
RESULTS	5
CONCLUSIONS	8
BIBLIOGRAPHY	11
DISTRIBUTION	13

TABLES

Table 1. Means and standard deviations of variables	4
2. Reliabilities and intercorrelations of associate evaluations	6
3. Correlation of associate evaluations with OEB and school grades	7
4. Correlation of associate evaluations with acquaintanceship	8

ASSOCIATE EVALUATIONS: NOMINATIONS VS. RATINGS

THE PROBLEM

The U.S. Army has a long history of using associate evaluations--peer ratings--as selection and evaluation devices in training situations. The best known and most comprehensively researched Army program is the "Aptitude for Service Ratings" at the U. S. Military Academy.^{1 2} Associate evaluations have also been investigated for use in personnel selection. Peer ratings in industry have been found capable of predicting future performance as well as accurately reflecting current performance.³ However, the methods used in obtaining the data have varied considerably. Two methods are used most frequently: the rating procedure, where each member of the rating group assigns every other member a score from an evaluation scale, and the nomination procedure, where each member of the rating group selects a given number of top and bottom individuals in terms of value from the total group. While both techniques have produced similar results, they have been used primarily in different studies, so that direct comparisons are limited. However, Suci⁴ found that several procedures produced results of about the same reliability and recommended the use of nominations because they were easier to prepare, administer, and score and less frustrating to the rater. Hammer⁵ also found that rankings and nominations of the same individuals produced similar evaluations and recommended the use of nominations. However, neither studied the differences between the two techniques in their relationship with other measures.

¹ Haggerty, H.R. Status report on research for the U.S. Military Academy. ARI Technical Research Report 1133. (DDC 432 090) October 1963.

² Tobin, D.J., and Marcum, R.H. Leadership evaluation. Research Report, Office of Military Psychology and Leadership, U.S. Army Military Academy. West Point, N.Y., 1967.

³ Nadal, Ramon A. A review of peer rating studies. Research Report No. 68-8, Office of Military Psychology and Leadership, U. S. Army Military Academy. West Point, N.Y.. 1968.

⁴ Suci, G.J., Vallance, T.R. and Glickman, A.S. An analysis of peer ratings: I. The assessment of reliability of several question forms and techniques used at the Naval Officer Candidate School. Bureau of Naval Personnel Technical Bulletin 54-9. Newport, R.I., 1954.

⁵ Hammer, C.H. A simplified technique for evaluating basic trainees on leadership potential. ARI Research Memorandum 63-10. 1963.

OBJECTIVES

The overall objectives of this study were to investigate the reliabilities of three types of associate evaluations and further to compare each evaluation's relationships with other measures of leadership and school performance. The specific objectives of the research were to compare three types of associate evaluations scoring--one rating procedure and two nomination procedures--in terms of 1) reliability, 2) interrelationship of associate evaluation techniques, 3) relationship with other leadership measures (i.e., the Officer Evaluation Battery), and 4) relationship with concurrent performance measures (i.e., school grades). Points 3) & 4) were included to expand knowledge beyond results of previous studies.

METHOD

Sample Population

All officers attending a nine week training course ($N = 125$) were used for the study. Almost all were 2nd Lieutenants on active duty only for the training period. While some individuals were appointed on a rotating basis to student command positions, these positions were primarily nominal in nature. The officers attended classes approximately 8 hours a day five days a week and went "home" in the evening. The officers were split into 4 platoons the platoon being the evaluation group within which leadership choices were made. Once an associate evaluation score was produced within a rating group then all individuals from all platoons were combined into one group for analyses reported in the results section.

Variables

Four distinct sets of data were collected. They were:

Associate evaluations. Each officer was forced to rate individuals along a 7-point scale with "equal" numbers in each category (rating scale). Each officer was then instructed to select the one officer in his platoon who had the highest leadership potential. Next he was instructed to select the officer who had the lowest leadership potential, continuing until 1/7 of the group was in the high and 1/7 in the low categories (nomination score 1). He then continued with the next highest and lowest 1/7 (top and bottom two categories, nomination score 2) and again the highest and lowest 1/7; the remaining 1/7 was placed in a middle category and included the individuals he did not know.

Experimental diagnostic leadership measures. The Officer Evaluation Battery (OEB) (PT 4934 and PT 4935) was administered to all officers at the start of training. The OEB yields seven scale scores:

Combat Leadership, Technical-Managerial Leadership, and Career Potential with a cognitive (or knowledge factor) and a non-cognitive (or attitudinal factor) for each, plus Career Intent. (See the "Manual for Interpreting the Officer Evaluation Battery" ⁶ for further explanation of the scales and development of the test.)

Training grades. A variety of evaluative techniques were used by the school to measure performance during training. Table 1 lists the various evaluations used.

Acquaintanceship ratings. Each officer was instructed to rate the degree to which he was acquainted with each member of his group. Ratings were done on a five-point scale (1 = DO NOT KNOW, 2 = MET ONCE OR TWICE; 3 = LIMITED CONTACT IN CLASSES; 4 = EXTENSIVE CONTACT IN CLASSES; and 5 = CLOSE PERSONAL RELATIONSHIP).

Analysis

Peer evaluations were scored three different ways.

$$1) \quad R = \frac{\sum_{1}^n r}{n}$$

$$2) \quad N_1 = \frac{\sum_{1}^n rT_1}{n}$$

$$3) \quad N_2 = \frac{\sum_{1}^n rT_2}{n}$$

where:

R = associate rating score

r = scale score (1-7) received by a person

n = number of persons giving an evaluation

N_1 = nomination score 1

rT_1 = scale score transformed as follows:

1 = 1; 2, 3, 4, 5, or 6 = 2; and 7 = 3

N_2 = nomination score 2

rT_2 = scale score transformed as follows:

1 or 2 = 1; 3, 4, or 5 = 2; and 6 or 7 = 3

⁶U.S. Army Research Institute for the Behavioral and Social Sciences. Manual for Interpreting the Officer Evaluation Battery. Arlington, Va: Army Research Institute, 1973.

Table 1

MEANS AND STANDARD DEVIATIONS OF VARIABLES
(N = 125)

Variable	\bar{x}	Standard Deviation
<u>Evaluations</u>		
Rating (R) 4th week	3.97	1.18
Rating (R) 8th week	3.96	1.16
Nomination (N ₁) 4th week (top & bottom categories)	2.00	.30
Nomination (N ₁) 8th week	2.00	.29
Nomination (N ₂) 4th week (top & bottom two categories)	2.12	.36
Nomination (N ₂) 8th week	2.11	.36
4th week acquaintanceship rating	3.37	.36
8th week acquaintanceship rating	3.55	.34
<u>OEB</u>		
Combat Leadership (Cognitive)	107.62	20.07
Managerial-Tech Lead. (Cognitive)	107.27	21.80
Career Potential (Cognitive)	109.44	20.73
Combat Leadership (Non-cognitive)	109.05	18.51
Managerial-Tech Lead. (Non-cognitive)	101.47	20.81
Career Potential (Non-cognitive)	103.93	16.20
Career Intent (Non-cognitive)	93.39	17.66
<u>School Grades</u>		
Maintenance Management	84.12	8.08
Combat Engineer Practical (Lead.)	83.05	8.24
Leadership Exam	77.45	10.13
Night Land Navigation	93.60	15.64
Physical Fitness	79.68	5.27
Leadership, Staff, Intelligence, etc.	89.50	7.73
Combat Operation	80.99	7.64
Engineer Reconnaissance	83.86	7.89
Combat Engineer Practical (Tech)	80.48	6.50
Orienteering	89.12	7.52
Fixed Bridges and Construction	80.04	12.64
Heavy Construction	79.83	15.83

Acquaintanceship ratings were converted to scores for an individual by computing his mean ratings. His score then became the degree to which he was known by the group as a whole.

Reliabilities of associate evaluations were estimated by using the split-half (group) technique,⁷ where random halves (raters) of the rating group were used to produce two separate scores for each individual. These two scores from each half were correlated with each other over all rating groups. The correlation was then corrected by use of the Spearman-Brown prophecy formula. The same split of the rating group was used for the split-half estimate for all three associate evaluation techniques.

Product moment correlations were computed between all associate evaluation techniques. Zero order correlations were computed between each associate evaluation technique and the remaining variables. Hotelling's t-tests⁸ for differences between pair-wise correlation coefficients were performed.

RESULTS

Table 1 lists all variables with their means and standard deviations. Table 2 presents the split-half reliabilities and intercorrelations for all associate evaluation techniques and for 4th and 8th weeks. The split-half reliabilities were quite similar for Ratings and N_1 nominations (top/bottom categories), but N_2 Nominations (top/bottom two categories) were lower, .85. The test-retest reliabilities were very high (.90's) for all methods. Finally, there was a high degree of relationship between all techniques for one session with slightly smaller values across sessions.

The relationships of associate evaluations with the Officer Evaluation Battery and school grades are shown in Table 3. One hundred and twenty-six pair-wise Hotelling t-tests were computed for differences between correlation coefficients for each associate evaluation (R , N_1 , and N_2 for the fourth and the eighth week); i.e., six t-tests (R vs N_1 , R vs N_2 , and N_1 vs N_2 for the fourth and eighth weeks) were performed for each of the 21 variables. Three significant differences ($p < .05$) were found ($t = 2.35$ for fourth week R vs N_2 , Managerial-Technical Leadership, cognitive; $t = 2.29$ for eighth week R vs N_2 , Managerial-Technical Leadership, non-cognitive; and $t = 2.67$ for fourth week R vs N_1 , Fixed Bridges and Construction exam). It was recognized that

⁷Gordon, L.V. Estimating the reliability of peer ratings. Educational and Psychological Measurement, 1969, 29, 305-313.

⁸Guilford, J.P. Fundamental Statistics in Psychology and Education. (4th ed.) New York: McGraw-Hill, 1956.

Table 2
RELIABILITIES AND INTERCORRELATIONS OF ASSOCIATE EVALUATIONS

Variable	Split/half reliability ^a	Intercorrelation			
		1	2	3	4
1. Rating 4th week	.90	---	---	---	---
2. Rating 8th week	.90	.94 ^b	---	---	---
3. Nomination (N_1) 4th week	.92	.92	.86	---	---
4. Nomination (N_1) 8th week	.91	.89	.93	.92 ^b	---
5. Nomination (N_2) 4th week	.85	.97	.90	.91	.88
6. Nomination (N_2) 8th week	.85	.91	.97	.95	.93

^aCorrected using Spearman-Brown prophecy formula.

^bTest-retest reliabilities.

Table 3

CORRELATION OF ASSOCIATE EVALUATIONS
WITH OEB AND SCHOOL GRADES
(N=125)

OEB	Variable	EVALUATION				R	N ₁	N ₂
		Fourth Week	N ₁	N ₂	Eight Week			
Combat Leadership (Cog.)	.09	.09	.09			.15	.15	.14
Managerial-Tech. Lead. (Cog.)	-.36 ^a	-.32	-.31 ^a			-.30	-.27	-.29
Career Potential (Cog.)	-.10	-.11	-.08			-.07	-.07	-.06
Combat Leadership (N-Cog.)	.50	.53	.49			.49	.50	.47
Managerial-Tech. Lead. (N-Cog.)	.25	.28	.25			.29 ^a	.26	.24 ^a
Career Potential (N-Cog.)	.09	.08	.09			.13	.11	.12
Career Intent (N-Cog.)	.38	.39	.39			.35	.31	.34
School Grades								
Maintenance Management	.18	.23	.17			.26	.28	.26
Combat Engineer Practical (Lead)	.27	.27	.26			.32	.32	.30
Leadership Exam	.09	.11	.07			.13	.13	.13
Night Land Navigation	-.20	-.20	-.21			-.15	-.16	-.17
Map and Aerial Photo.	.12	.14	.16			.20	.17	.18
Physical Fitness	.29	.25	.27			.29	.25	.27
Leadership, Staff, Intell, etc.	-.02	.01	-.01			.09	.11	.08
Combat Operation	.11	.13	.10			.13	.17	.15
Unit Duties	.21	.22	.20			.21	.23	.19
Engineer Reconnaissance	.16	.15	.16			.17	.19	.14
Combat Engineer Practical (Tech.)	.19	.18	.21			.28	.27	.25
Orienteering	.08	.05	.12			.06	.05	.06
Fixed Bridges and Construction	.08 ^a	.16 ^a	.10			.13	.18	.13
Heavy Construction	.07	.12	.10			.14	.18	.15

^aPairs significantly different, p < .05

the three tests performed within a week, R vs. N_1 , R vs. N_2 , and N_1 vs N_2 , were not independent tests, and therefore the p value of .05 was inflated slightly to some unknown value. A more exact test was not found and the small number of significant differences found would indicate that this error did not produce an identifiable distortion in the results.

A different pattern emerged from acquaintanceship, as is shown in Table 4. No significant differences were found between Ratings and N_2 Nominations, but N_1 Nominations had a significantly lower relationship with acquaintanceship than either Ratings or N_2 Nominations (R vs N_1 , 4th week: $t = 3.64$, $p < .05$; N_1 vs N_2 , 4th week: $t = 3.03$, $p < .05$; R vs N_1 , 8th week: $t = 3.86$, $p < .05$; and N_1 vs N_2 , 8th week: $t = 5.16$, $p < .05$).

Table 4

CORRELATION OF ASSOCIATE EVALUATIONS WITH ACQUAINTANCESHIP

Evaluation	Acquaintanceship	
	Fourth week	Eighth week
Rating 4th week	.64	.51
Rating 8th week	.62	.50
Nomination (N_1) 4th week	.54	.33
Nomination (N_1) 8th week	.57	.39
Nomination (N_2) 4th week	.63	.55
Nomination (N_2) 8th week	.61	.53

CONCLUSIONS

The three methods of scoring the associate evaluations yielded comparable levels of reliability which were high enough to justify their use for individual selection purposes. There was some indication that the use of large numbers of individuals in high and low categories (N_2 Nomination technique) might yield slightly lower split-half

reliabilities. This would seem to reflect the difficulty of making reliable discrimination for the category 6 and 2 individuals plus the dilution of this information into category 7 and 1 individuals. Furthermore, the correlations of each technique with other leadership measures (OEB and school grades) and technical training grades indicated that the associate evaluation techniques were all measuring the same things. This was further substantiated by the high degree of interrelationship between techniques. The only difference found was the lower degree of relationship between N_1 Nominations and acquaintanceship scores. The implication is that the less extreme scores (middle categories) are determined more by the degree to which a person is known by individuals in the group. This did not, however, affect the relationship with other measures. This finding of a lack of relationship between acquaintanceship and performance has been consistent⁹.

On the basis of these findings it would seem that nominations, using a relatively small number of individuals, can be substituted for full rating without any loss in reliability or degree of relationship with concurrent performance measures. A potential benefit is a decreased reliance on acquaintanceship (friendship/popularity) for the more difficult middle category evaluations.

An assumption made, but yet unproven, is that modifying the instructions to the raters to reflect only a nomination technique will not change their behavior, i.e., the individuals selected. Research is now underway to investigate the results of using a nomination technique very similar to the one administered here but with instructions for choosing individuals for only the top and bottom categories.

If the additional benefits of decreased rater resistance to making nominations and the greater ease with which evaluations can be administratively handled and scored are added to the above research findings, the nominations (N_1) technique is the clear choice for operational use. Two cautions should be added to this generalization. First, the effect of group size was not investigated and there are some reasons to suspect that the findings might not hold for smaller evaluation groups. Second, the use of associate evaluations as measures of long-term performance was not studied and the possibility exists that the evaluation techniques could yield different results for these measures. These two potential problem areas are now under investigation.

⁹Hollander, E.P. and Webb, W.B. Leadership, fellowship, and friendship, an analysis of peer nominations. Journal of Abnormal and Social Psychology, 1955, 30, 163-167.

BIBLIOGRAPHY

Gordon, L. V. Estimating the reliability of peer ratings. Educational and Psychological Measurement, 1969, 29, 305-313.

Guilford, J. P. Fundamental Statistics in Psychology and Education. (4th ed.) New York: McGraw-Hill, 1956.

Haggerty, H. R. Status report on research for the U. S. Military Academy. ARI Technical Research Report 1133. Arlington, Virginia. October 1963. (DDC 432 090)

Hammer, C. H. A simplified technique for evaluating basic trainees on leadership potential. ARI Research Memorandum 63-10. 1963.

Hollander, E. P. The friendship factor in peer nominations. Personnel Psychology, 1956 9, 435-447.

Hollander, E. P. and Webb, W. B. Leadership, fellowship, and friendship, an analysis of peer nominations. Journal of Abnormal and Social Psychology, 1955, 50, 163-167.

Lawler, E. E., III. The multitrait-multirater approach to measuring managerial job performance. Journal of Applied Psychology, 1967, 51, 369-381.

Medland, F. F., and Olans, J. L. Peer rating stability in changing groups. ARI Technical Research Note 142. (DDC 601 972). April 1964.

Nadal, Ramon A. A review of peer rating studies. Research Report No. 68-8, Office of Military Psychology and Leadership, U.S. Army Military Academy. West Point, N.Y., 1968.

Parrish, J. A. and Drucker, A. J. Personnel research for OCS. ARI Technical Research Report 1107. November 1957. (AD1 5507).

Roadman, H. E. An industrial use of peer ratings. Journal of Applied Psychology, 1964, 48, 211-214.

Suci, G. J., Vallance, T. R., and Glickman, A. S. An analysis of peer ratings: I. The assessment of reliability of several question forms and techniques used at the Naval Officer Candidate School. Bureau of Naval Personnel Technical Bulletin 54-9. Newport, R.I., 1954.

Tobin, D. J., and Marcum, R. H. Leadership evaluation. Research Report, Office of Military Psychology and Leadership, U. S. Army Military Academy. West Point, N.Y., 1967.

U. S. Army Research Institute for the Behavioral and Social Sciences. Manual for interpreting the Officer Evaluation Battery. Arlington, Va: Army Research Institute, 1973.

Waters, L. K., and Waters, C. W. Peer nominations as predictors of short-term sales performance. Journal of Applied Psychology, 1970, 54, 42-44.

Webb, W. B. The problem of obtaining negative nominations in peer ratings. Personnel Psychology, 1955, 8, 61-63.

Weitz, J. Selecting supervisors with peer ratings. Personnel Psychology, 1958, 11, 25-35.

Wherry, R. J., and Fryer, D. H. "Buddy Ratings," popularity contest or leadership criterion. Personnel Psychology, 1949, 2, 147-149.

Wood, B. D., Baier, E., Buros, O. K., Chauncey, H. and Findley, W. G. Survey of the aptitude for service rating system, Report. West Point, N.Y., May 1953.

DISTRIBUTION

ARI Distribution List

- *1 OASD (M&RA)
- 1 HQDA (DACS-ZC)
- *1 HQDA (DAPE-MPC)
- 1 HQDA (DAPE-CPS)
- *1 HQDA (DAPE-DW)
- 2 HQDA (DARD-ARZ-B)
- 1 HQDA (DARD-ARB)
- *1 HQDA (DARD-ARP)
- *2 HQDA (DARD-DT)
- 1 HQDA (DARD-IST-P)
- 5 HQDA (DAFD-DC)
- 1 HQDA (DAFD-ZBD)
- 1 HQDA (DAFD-MF)
- 1 HQDA (DAFD-CN)
- 1 HQDA (DAMI-DCS)
- 5 HQDA (DAPO-PM)
- 1 HQDA (DAIO-ZC)
- 1 HQDA (DAAG-PSS-A)
- 1 HQDA (DAAG-ASL)
- 1 HQDA (DAPM-MSB)
- *1 HQDA (DAPM-PL)
- *1 HQDA (SGRD-MDB)
- 3 HQDA (EPEEC)
- 4 HQDA (RDSE)
- 1 HQDA (RDRE)
- 1 HQDA (RDRD)
- *1 HQ USAMC, ATTN: AMCRD-TE
- 2 HQ USCONARC, ATTN: GI-ATPER
- 10 HQ USCONARC, ATTN: ATIT-STM
- 2 HQ First US Army
- 2 HQ Third US Army
- 2 HQ Fifth US Army
- 2 HQ Sixth US Army
- 1 HQ Sixth US Army, ATTN: Library
- *6 HQ USACDC, ATTN: DCS/Opsn QAD
- 1 HQ USACDC, ATTN: Library
- 1 HQ USASA, ATTN: IARD-T
- *1 HQ USA Computer Sys Cmd, ATTN: CSCS-TMT-SD
- *1 HQ USA Recruiting Cmd, ATTN: USARCO
- 1 Dir, Project MASSTER, Ft Hood
- *1 USA Electronics Cmd, ATTN: AMSEL-CT-A
- *1 USA Electronics Cmd, ATTN: AMSEI-CB-AS
- *1 USA Electronics Cmd, ATTN: AMSEL-PA-AH
- 1 USACDC Exper Cmd, Ft Ord, ATTN: Plans Officer
- *1 USACDC Exper Cmd, Ft Ord, ATTN: Library
- *1 USACDC, Cbt Sys Gp, ATTN: CSYGC-S
- *1 USACDC Institute of Land Combat, ATTN: Library
- 1 USACDC Armor Agency
- 1 USACDC Artillery Agency
- 1 USACDC Aviation Agency
- 1 USACDC Infantry Agency, ATTN: CAGIN-OA
- 1 USACDC Infantry Agency, ATTN: Central Files
- 1 USACDC SW Agency
- 1 USACDC Pers & Adm Svcs Agency
- *1 USACDC Liaison Ofc, USAF, Tact Air Warfare Cen, Eglin AFB
- 1 USA Adv Mat Concepts Agency, ATTN: AMXAM-TS
- 1 WRAIR, ATTN: Neuropsychiatry Div.
- *1 WRAIR, ATTN: Dept of Exper Psycho-physiology
- *1 USA Med Res Lab, Ft Knox, ATTN: Exper Psychol
- *1 USA Natick Labs, ATTN: Library
- 1 USA Natick Labs, ATTN: Psychol Labs
- 1 USA Natick Labs, ATTN: Assoc Dir, Beh Sci, Pion Div
- *1 USA Mobility Eq. R&D Cen, ATTN: HFE
- *1 USA Mobility Eq. R&D Cen, ATTN: Library
- *1 USA Electronic Prvg Grd, ATTN: STEEP-SU-I
- *1 USA Electronic Prvg Grd, ATTN: STEEP-T-BI
- 2 USA Aberdeen Prvg Grd, ATTN: Dir, HEL
- *1 USA Aberdeen Prvg Grd, ATTN: HEL, R. A. Monty
- *1 USA Edgewood Arsenal, ATTN: Hum Factors Gp, Biomed Lab
- 1 USA Tropic Test Cen, Ft Clayton, ATTN: STETC-PD-M
- *2 USA Arctic Test Cen, Alaska
- *1 USA Gen Eq. Test Activ., Ft Lee, ATTN: HF Div, MED
- *1 USA Avn Mat Lab, ATTN: Library
- *1 EWL, Ft Holabird, ATTN: Intel Mat. Dev. Off.
- *2 USA Garrison, Ft Huachuca, ATTN: Tech Ref Dff
- 1 USA C&GSC, ATTN: Educ Adv
- 6 USA C&GSC, ATTN: Library
- 1 USA C&GSC, ATTN: Beh Sci Rep, Dir Grad Stud & Res
- 1 USA C&GSC, ATTN: DOI
- *2 USMA, Mil Psych & Ldrshp
- *1 USMA, Dir of Institutional Res
- 1 USMA, Library
- 1 USA Ordn Cen & Sch, Aberdeen PG, ATTN: DDI
- 1 USA Ordn Cen & Sch, Aberdeen PG, ATTN: ATSOR-1R
- 2 USA Engr Sch, Ft Belvoir, ATTN: DOI
- *2 USA Mgt Sch, Ft Belvoir
- 1 USA Inf Sch, Ft Benning, ATTN: DDI
- *1 USA Inf Sch, Ft Benning, ATTN: AJIGP
- *1 USA Inf Sch, Ft Benning, ATTN: AJIIS-H
- 1 USA Inf Sch, Ft Benning, ATTN: Library
- 1 USA Inf Bd, Ft Benning, ATTN: Secy ATBD
- 1 USA Air Def Sch, Ft Bliss, ATTN: DOI
- *2 USA Air Def Sch, Ft Bliss, ATTN: Library
- 1 USA Air Def Sch, Ft Bliss, ATTN: ATSAD-DL-C
- *1 USA Air Def Bd, Ft Bliss
- 1 USA Inst Mil Asst, Ft Bragg, ATTN: DOI
- 1 USA Inst Mil Asst, Ft Bragg, ATTN: ATSMA-ID
- 1 USASA Tng Cen & Sch, Ft Devens
- 2 USA Transport Sch, Ft Eustis, ATTN: DDI
- 2 USA MP Sch, Ft Gordon, ATTN: DDI

*Does not receive reports for all research areas.

1 USA SE Sig Sch, Ft Gordon, ATTN: DOI
 1 USA SE Sig Sch, Ft Gordon, ATTN: Ed Advsr
 2 USA Chaplains Sch, Ft Hamilton, ATTN: DOI
 2 USA AG Sch, Ft Benjamin Harrison, ATTN: DOI
 2 USA Fin Corps Sch, Ft Benjamin Harrison, ATTN: DOI
 *1 USA Med Fld Svc Sch, Ft Sam Houston, ATTN: Stimson Library
 2 USA Cbt Surv Sch Tng Cen, Ft Huachuca, ATTN: DOI
 2 USA Int Cen & Sch, Ft Huachuca, ATTN: DOI
 *1 USA Int Cen & Sch, Ft Huachuca, ATTN: AHBH-S-CB-(ASRC)
 *1 USA Int Cen & Sch, Ft Huachuca, ATTN: Library
 1 USA Armor Sch, Ft Knox, ATTN: DOI
 *1 USA Armor Sch, Ft Knox, ATTN: AHBAAS-DMP
 2 USA QM Sch, Ft Lee
 2 USA Chem Corps Sch, Ft McClellan
 2 USWAC Sch, Ft McClellan, ATTN: DOI
 1 USA Sig Cen & Sch, Ft Monmouth, ATTN: DOI
 1 USA Sig Cen & Sch, Ft Monmouth, ATTN: Educ Advsr
 1 USA Msl & Mun Cen & Sch, Redstone Arsnl, ATTN: DOI
 *1 USA Msl & Mun Cen & Sch, Redstone Arsnl, ATTN: Lib
 2 USA Avn Sch, Ft Rucker, ATTN: DOI
 1 USA Avn Sch, Ft Rucker, ATTN: Library
 *1 USA Avn Test Bd, Ft Rucker, ATTN: STEBG-TP-V
 *1 USA Fld Arty Sch, Ft Sill, ATTN: DOI (Ed Svcs Div)
 2 USA Prim Hel Cen/Sch, Ft Wolters, ATTN: DOI
 2 ONR, Code 45B
 3 US Navy, BuPers (Pers A3)
 *1 US Navy, BuM&S, Code 513
 *1 US Navy, BuM&S, Code 713
 1 Nav Pers Tng Rsch Lab, San Diego, ATTN: Library
 1 Nav Pers Tng Rsch Lab, San Diego, ATTN: Stat Dept
 *3 Nav Pers Tng Rsch Lab, San Diego, ATTN: Pers Meas Rsch Dept
 2 Nav Pers R&D Lab, Washington
 *1 Nav Med NA Rsch Unit, San Diego
 15 Nav Rsch Lab, Library, Code 2029
 1 Nav Rsch Lab, Code 2027
 *1 Nav Tng Dev Cen, Orlando, Code 55
 *1 Nav Aerospace Med Inst, Pensacola, Code 31
 1 Nav Postgraduate Sch, Monterey, ATTN: Library
 *2 HQ USMC, ATTN: ADIB
 *1 HQ USAF (AF/DPXYA)
 *1 HQ USAF (INYMA)
 1 HQ AFSC/DLSL
 *1 HQ AFLS DPCB
 *1 SMAMA(DPCB)
 1 USAF Air University AUL/LSA
 3 USAF School of Aerospace Med-Aeromedical Lib (SCL-4)
 3 US Air Force Academy, PDO 4013A
 *1 US Air Force Academy, DMPL
 1 AFHRL (DOJZ), Brooks AFB
 *1 AFHRL (FT), Williams AFB
 1 AFHRL/MD, Alexandria, Va.

*3 AFHRL (PD), Lackland AFB
 *1 CINCPACAF (IGSAG)
 2 US Armed Forces Institute
 *1 American Embassy NATO International Staff
 *1 US Dept of Agriculture, Pers Rsch Staff
 *1 US Dept of Labor, Info Cen for Mpr Rsch
 2 US Coast Guard Hq, C/Psychol Rsch
 *1 US Coast Guard Acad., Director of Admissions
 *1 US Coast Guard Tng Cen., Governors Island, Educ Advis.
 *1 National Security Agency, ATTN: M13
 *1 Central Intelligence Agency, ATTN: OCR/ADD/Publications
 *1 Nat Cen for Child Health and Human Dev
 1 NIMH OC NCMHI
 *1 FASEB, Life Sciences Rsch Ofc
 *1 BLM, Denver
 2 HumRRO, Alex., ATTN: Library
 2 HumRRO Div 2, Ft Knox
 1 HumRRO Div 3, Presidio of Monterey
 1 HumRRO Div 4, Ft Benning
 *1 HumRRO Div 5, Ft Bliss
 1 HumRRO Div 6, Ft Rucker
 1 Inst. for Def Anal., Arlington
 1 Rsch Anal Corp, McLean, ATTN: Library
 1 RAND Corp, Santa Monica, ATTN: Library 9BD
 *1 Cen for Nav Anal, Arlington, ATTN: Document Center
 *1 AIR CRESS, Kensington, ATTN: Info Sys Br
 1 Hum Engr Info & Anal Svc, Tufts Univ
 *1 Biological Abstracts
 1 Univ Illinois, Aviation Rsch Lab
 *1 Human Factors Rsch Inc, Goleta
 1 Litton Sci Sup Lab, Ft Ord, Behavioral Sciences
 140 Library of Congress, Unit Doc Exped Proj
 6 Library of Congress, Exchange & Gift Div
 12 Defense Documentation Center
 *4 Dir Psych, Army Hq, Russell Ofcs, Canberra
 1 Scientific Advsr, Mil Bd, Army Hq, Russell Ofcs, Canberra
 1 Mil and Air Attaché, Austrian Embassy
 *1 Centre de Recherche Des Facteurs, Humaine de la Defense Nationale, Brussels
 4 British Defense Staffs Washington, ATTN: Scientific Officer
 2 Canadian Joint Staff Washington
 3 C/Canadian Defense Rsch Staff, C/CRDS(W)
 1 C/Air Staff, Royal Canadian AF, ATTN: Pers Std Anal Br
 *1 Def & Civ Inst of Environ Med, Canada
 *1 Militærpsykologisk Tjeneste, Copenhagen
 *1 Military Attaché, French Embassy, ATTN: Doc Sec
 *1 Medecin Chef, C.E.R.P.A.-Arsenal, Toulon/Naval France
 1 Prin Scientific Off, Appl Hum Engr Rsch Div, Ministry of Defense, New Delhi
 1 Pers Rsch Ofc Library, AKA Irgun, Israel Defense Forces
 *1 Ministerie van Defensie, Oper Officer Personeel KL, Afd Sociaal Psychologische Zaken, The Hague, Netherlands

*Does not receive reports for all research areas.